Serial Powering Status

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OKState: May 20th, 2016

Current Status

* We have an adjustable Constant Current Load
  * Wide Bandwidth and Fast Response
    * So we can “inject” instantaneous loads
* We built an adjustable Constant Current Supply
  * Reported on it in February at ITk week
  * Our latest prototype didn't meet our expectations

Where are we now

* The problem with our last supply is that we used High Side current regulation
    * when the load resistance increased we were not able to keep a constant load current
        * The internal regulation in our system couldn't deal with the large voltages

Where are we now

* Redesigned the PSU so that it can handle large load resistances
* Low side current regulation
* Independent Tracking pre-regulator
* Everything seems to look ok!

What's Next

* We will build a version of our supply that can be distributed to other institutes
* Begin to Ramp up our test stand creation
  * Create Mock Quad Modules
    * Constant Current Loads
    * Shunt Regulators
    * Decouple Serial Powering from FE

What's Next

* Test Stand
  * PSU
  * Controls
  * Cable Plant
* Eventually we will have actual modules in the test stand

Schedule

* Prototype Done EOY 2016
* Tests Done Mid 2017
* Integrated 16FEs into TestStand EOY 2017
* 2nd Prototype EOY 2019

Cable Taskforce

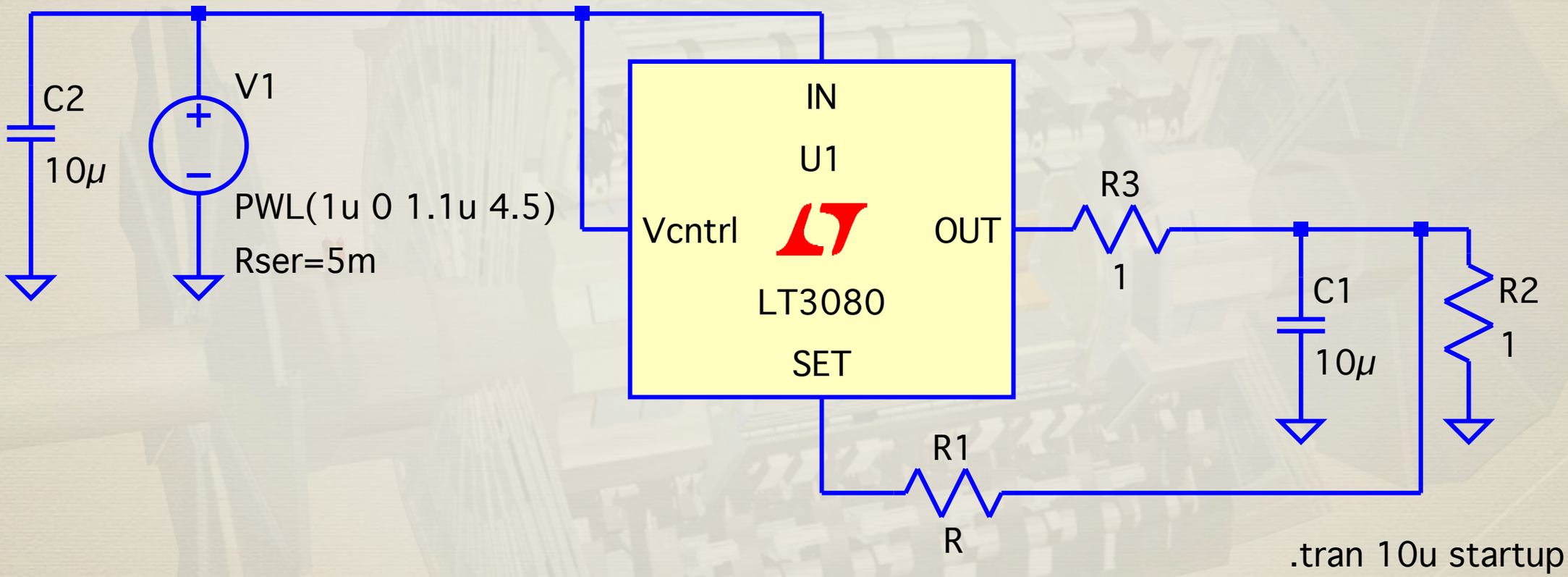
* Cable Taskforce was convened to asses Cable Status
* Taskforce has had a few meetings
* More data is needed before a detailed analysis of PIXEL cables can be made.
* Taskforce is working to collect this data

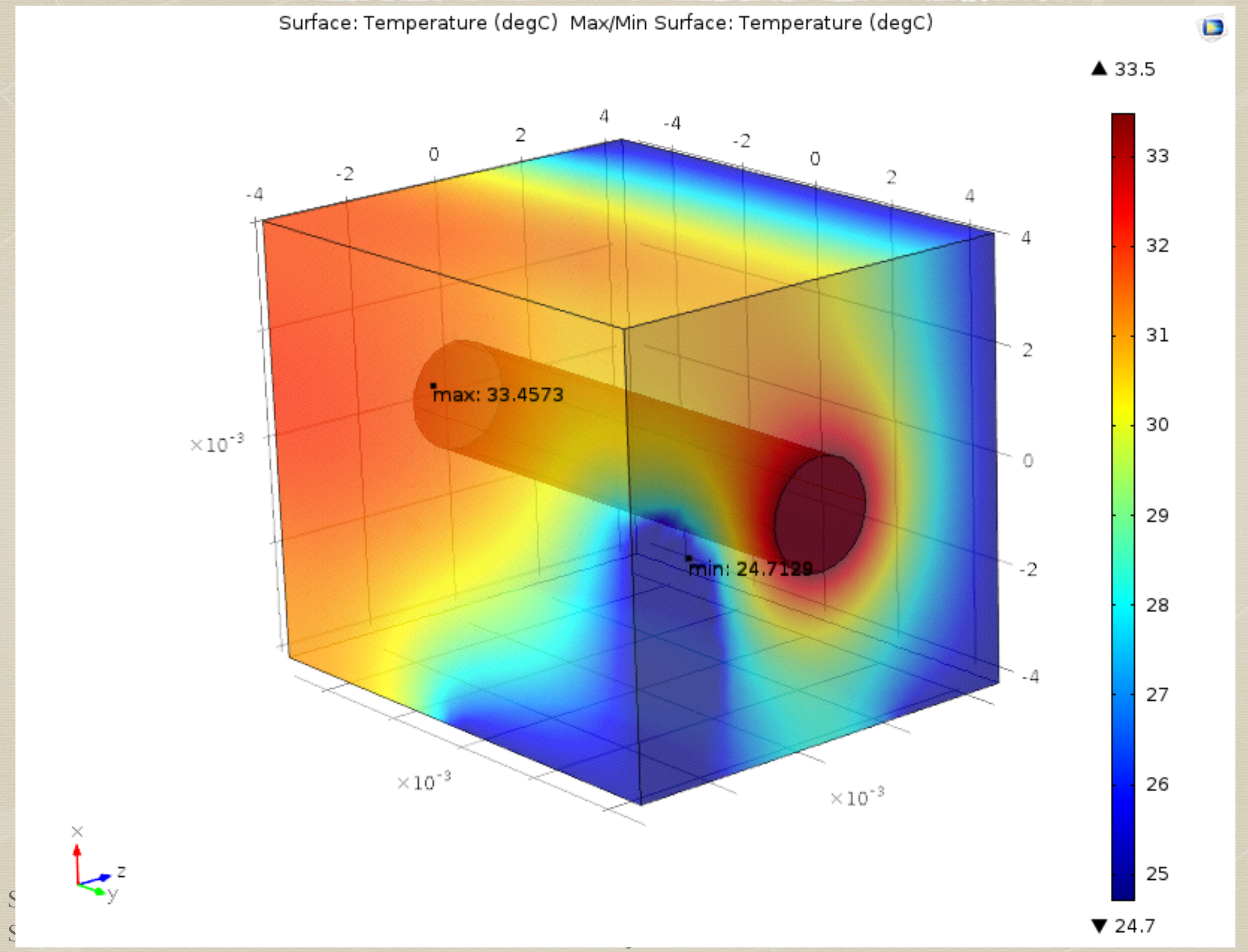
Summary

* We have a working power supply designed for constant current
* We are working to build a PSU for distribution
  * to be completed EOY 16
* Our Test Stand will be partially built by EOY 16

THANK YOU

Backup


C2
10µ
V1
PWL(1u 0 1.1u 4.5)
Rser=5m
IN
U1
Vcntrl
OUT
LT3080
SET
R3
1
C1
10µ
R2
1
R1
R
.tran 10u startup


Surface: Temperature (degC) Max/Min Surface: Temperature (degC)
▲ 33.5
33
32
31
30
29
28
27
26
25
▼ 24.7
max: 33.4573
min: 24.7129
-4
-2
0
2
4
×10⁻³
x
z
y